Lab 5 Specifications

Lab-specific Specifications

Proficiency

☐ Design measures and displays speed of motor in units of rev/s with an update rate of at least 1 Hz.
☐ Measured speed matches true motor speed and direction (calculations should be provided in the report to verify this).
☐ Code uses interrupts (rather than polling or timers) to detect encoder pulses.
☐ Interrupt code does not miss any encoder pulses at normal speed.
☐ Motor speed is reported as zero when it is not spinning

Excellence

☐ Design uses all edges of encoder pulses to achieve highest resolution measurement.
☐ MCU does not miss any pulses at high speed and outputs a non-zero velocity at low speeds.
☐ Report compares the performance of interrupt based code to manual polling at high speeds.
☐ Report includes flowchart illustrating main steps of the program and function calls.

General Specifications

Proficiency

General Schematic Specifications

☐ All pin names labeled
☐ All pin numbers labeled
☐ Crossing wires clearly identified as junction or unconnected
☐ Neat layout (e.g., clear organization and spacing)
☐ All parts labeled with part number
☐ All component values present

Block Diagram

☐ Block diagram present with one block per SystemVerilog module
☐ Each block includes all input and output signals

HDL & Code Specifications

General Formatting

☐ Descriptive filename (e.g., `lab2_jb.sv`)
☐ Descriptive variable names
☐ Neat formatting (e.g., standard indentation, consistent formatting for variable names (kebab-case/snake_case/camelCase/PascalCase))
☐ Descriptive and clear function/module names

Comments

☐ Comments to indicate the purpose of each function/module

Lab Writeup/Summary

☐ Statement of whether the design meets all the requirements. If not, list the shortcomings.
☐ Number of hours spent working on the lab are included.
☐ Writeup contains minimal spelling or grammar issues and any errors do not significantly detract from clarity of the writeup.
☐ (Optional) List comments or suggestions on what was particularly good about the assignment or what you think needs to change in future versions.
☐ AI prototype attempted and some reflection is recorded.

Excellence

General Schematic Specifications

☐ Standard symbols used for all components where applicable
☐ Signals "flow" from left to right where possible (e.g., inputs on left hand side, outputs on right hand side)
☐ Title block with author name, title, and date

HDL & Code Specifications

General Formatting

☐ Name, email, and date at the top of every file
☐ Comment at the top of each source code file to describe what is in it
☐ Clear and organized hierarchy (e.g., delineation between top level modules and submodules)

Testbenches

☐ Testbenches written for each individual module to demonstrate proper operation
☐ Testbench output included in the report

Comments

Add specific notes here about the assignment.